

**Amendment and Response**  
Serial No.: 09/888,943  
Confirmation No.: 9282  
Filed: 25 June 2001  
For: RESPIRATOR VALVE

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**Remarks**

The Office Action dated 13 August 2002 has been received and reviewed. Claims 1 and 15 have been amended. The pending claims are claims 1-18. Reconsideration and withdrawal of the rejections are respectfully requested.

**AFFIRMATION OF PROVISIONAL ELECTION**

A Species Election under 35 U.S.C. § 121 was issued in the above-identified application. Two species of valve diaphragms were identified, namely: Species A1 (Figures 3, 6a, and 6b) and Species A2 (Figures 5a and 5b). In addition, three species of valve assemblies were identified, namely: Species B1 (Figure 4), Species B2 (Figure 7), and Species B3 (Figure 8).

Provisional elections were made during a telephone conversation between Examiner Patel and Applicants' representative Michelle Hakamaki on 2 August 2002.

Applicants hereby affirm, with traverse, the election of Species A2 (Figures 5a and 5b). Claims 1, 4, and 8-18 are generic to this species election. In addition, claims 3 and 5-7 read on the elected species.

Still further, Applicants hereby affirm, with traverse, the election of Species B2 (Figure 7). Claims 1-7 and 12-18 are generic to this species election. In addition, claim 11 reads on the elected species.

These elections are made with traverse and are made with the understanding that (a) the requirements will be withdrawn upon the finding of an allowable genus; and (b) any species withdrawn from consideration will be transferred to the elected subject matter unless it is found patentably distinct from the elected or allowed claims. Applicants traverse on the grounds that the generic claims include sufficiently few species that a search and examination of all the species at one time would not impose a serious burden on the Examiner.

Further, Applicants traverse the withdrawal of claim 14 as being drawn to a non-elected species. Applicants submit that claim 14 is generic to both the valve diaphragm species and the valve assembly species. Reinstatement and consideration of claim 14 is, therefore, requested.

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**Claim Amendments**

Claims 1 and 15 have been amended to recite that at least a portion of the contour shape of the valve flap is at least partially flattened when the valve flap contacts the valve seat. Support for this amendment may be found, e.g., in the Specification at page 6, lines 11-14. No new matter was added.

**The 35 U.S.C. § 112, Second Paragraph, Rejection**

Claims 1-13 and 15-16 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Specifically, the Office Action alleges that several elements lack antecedent basis. Applicants traverse this rejection.

Applicants submit that every element referred to by the Office Action has sufficient antecedent basis.

**Claim 1**

Sufficient antecedent basis for the element "the frame" appears in claim 1 at line 2, which recites "a valve body including a frame...."

The element "the valve assembly" does not appear in claim 1.

Sufficient antecedent basis for the element "the valve seat" appears in claim 1 at line 2, which recites "and a valve seat extending from the frame and at least partially surrounding the valve opening...."

Sufficient antecedent basis for the element "the valve flap" appears in claim 1 at line 4, which recites "a valve flap having a first portion attached to the frame...."

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**Claims 2-3 and 5-6**

Sufficient antecedent basis for the element "the valve flap" in dependent claims 2-3 and 5-6 may be found in independent claim 1 at line 4, which recites "a valve flap...."

**Claim 4**

Sufficient antecedent basis for the element "the valve flap" in dependent claim 4 may be found in independent claim 1 at line 4, which recites "a valve flap...."

Sufficient antecedent basis for the element "the valve contour" in dependent claim 4 may be found in independent claim 1 at line 7, which recites "wherein the valve flap has a contour shape."

**Claim 7**

Sufficient antecedent basis for the element "the plurality of support elements" in dependent claim 7 may be found in claim 7 at line 1, which recites "[t]he unidirectional valve of claim 6, further comprising a plurality of support elements...."

**Claims 8-10**

Sufficient antecedent basis for the element "the valve seat" in dependent claims 8-10 may be found in independent claim 1 at line 2, which recites "a valve seat extending from the frame and at least partially surrounding the valve opening...."

Sufficient antecedent basis for the element "the valve flap" in dependent claims 8-10 may be found in independent claim 1 at line 4, which recites "a valve flap...."

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**Claim 11**

Sufficient antecedent basis for the element "the valve body" in dependent claim 11 may be found in independent claim 1 at line 2, which recites "a valve body including a frame...."

Sufficient antecedent basis for the element "the valve seat" in dependent claim 11 may be found in independent claim 1 at line 2, which recites "a valve seat extending from the frame...."

**Claim 12-13**

Sufficient antecedent basis for the element "the valve" in dependent claims 12-13 may be found in each of dependent claims 12-13, which both recite "[t]he unidirectional valve of claim 1...." One skilled in the art would understand that the element "the valve" refers to the unidirectional valve of claims 12-13.

**Claim 15**

Sufficient antecedent basis for the element "the frame" in independent claim 15 may be found in claim 15 at line 4, which recites "a valve body including a frame...."

Sufficient antecedent basis for the element "the valve opening" may be found in claim 15 at line 4, which recites "a valve opening through the frame...."

Sufficient antecedent basis for the element "the valve seat" may be found in claim 15 at lines 4-5, which recites "a valve seat extending from the frame...."

**Claim 16**

Sufficient antecedent basis for the element "the face mask" in dependent claim 16 may be found in independent claim 15 at line 2, which recites "a face mask...."

For at least the above reasons, Applicants submit that each of claims 1-13 and 15-16 meet the requirements of 35 U.S.C. § 112, second paragraph. Reconsideration and withdrawal of this rejection are, therefore, respectfully requested.

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**The 35 U.S.C. § 102(b) Rejection**

Claims 1-2, 4-5, 7-8, 10-12, 15, and 17 were rejected under 35 U.S.C. § 102(b) as being anticipated by Japuntich et al. (U.S. Patent No. 5,509,436). Applicants traverse this rejection.

However, to further move this case towards issuance, Applicants have amended claims 1 and 15 as described above.

Applicants submit that claims 1-2, 4-5, 7-8, 10-12, 15, and 17 are not anticipated by Japuntich et al. because the reference does not teach each and every element of claims 1-2, 4-5, 7-8, 10-12, 15, and 17. For a claim to be anticipated under 35 U.S.C. § 102(b), each and every element of the claim must be found in a single prior art reference. *See* M.P.E.P. § 2131.

For example, amended independent claims 1 and 15 each recite a valve flap that has a contour shape. At least a portion of the contour shape of the valve flap is at least partially flattened when the valve flap contacts the valve seat. One example of a valve flap having a contour shape is illustrated in FIG. 3 of the present invention where flap portion 70 has a constant curvature that extends from first end 76 to second end 77. *See* Specification, page 6, lines 6-8. Further, for example, the valve flap of the present invention may have a contour shape that includes a compound curvature, e.g., the valve portion 70b illustrated in FIG. 5b.

In contrast to claims 1 and 15, Japuntich et al. teaches a unidirectional fluid valve having a flap that is flat, i.e., a flap that is not contoured. The flexible flap is "cut from a flat sheet of material having a generally uniform thickness." *Id.* at column 7, lines 55-56. The embodiments of Japuntich et al. relied upon in the Office Action actually illustrate a flat valve flap that is secured as a cantilever beam such that it has a concave curvature. *See*, e.g., Japuntich et al., column 6, lines 15-18. Instead of being at least partially flattened when contacting the valve seat (as is recited by claims 1 and 15), the valve flap of Japuntich et al. actually becomes curved when it contacts the valve seat. Because, Japuntich et al. does not teach each and every element of claims 1 and 15, Japuntich et al. cannot anticipate those claims.

Claims 2, 4-5, 7-8, 10-12, and 17, which depend from either claim 1 or claim 15, are not anticipated by Japuntich et al. for the same reasons as presented above for claims 1 and 15. In

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addition, claims 2, 4-5, 7-8, 10-12, and 17 each recite additional elements that further support patentability when combined with either claim 1 or claim 15.

For at least the above reasons, Applicants submit that claims 1-2, 4-5, 7-8, 10-12, 15, and 17 are not anticipated by Japuntich et al. Reconsideration and withdrawal of this rejection are, therefore, respectfully requested.

**The 35 U.S.C. § 103(a) Rejections**

Claim 9 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Japuntich et al. in view of Magidson et al. (U.S. Patent No. 6,047,698).

Applicants traverse this rejection and submit that claim 9 is not *prima facie* obvious in view of the cited references for at least the following reasons. To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art references must teach or suggest all the claim limitations. *See* M.P.E.P. § 2143.

Applicants submit that claim 9 is not *prima facie* obvious because the combination of Japuntich et al. and Magidson et al. does not teach all of the elements of claim 9. For example, claim 9, which depends from claim 1, incorporates all of the elements of claim 1, including the element of a valve flap having a contour shape. As discussed above in regard to the 35 U.S.C. § 102(b) rejection of claim 1, Japuntich et al. does not teach a valve flap having a contour shape as recited in claim 1.

The addition of Magidson et al. does nothing to remedy the deficiencies already present in Japuntich et al. Like that reference, Magidson et al. also teaches a flat flexible flap. *See*, e.g., Magidson et al., column 1, line 28; *see also* FIG. 2. Magidson et al. teaches that the flat flexible flap itself is deformed to have a concave curvature. *Id.* at column 1, lines 30-31. Therefore,

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Japuntich et al. and Magidson et al., either alone or in combination, do not teach all of the elements of claim 9.

Further, Applicant's traverse the Office Action's allegation that Magidson et al. teaches "a unidirectional fluid valve that does provide a portion of curvature of the valve flap that is at least partially flattened when the valve flap contacts the valve seat." Office Action, page 7, paragraph 4. Applicants submit that Magidson et al. actually teaches a flat flexible flap that is deformed when placed in contact with an arm 24 so that it has a concave shape. *See, e.g., Magidson et al., column 2, lines 28-33 ("[T]he arm 24 extends down inside of the seat 22 to capture the flap 20 against the portion 26 and deform the flap 20 to provide for a contouring of the flexible flap 20 off center to a concave shape as can be seen in FIGS. 3 and 4.").* Therefore, Magidson et al. does not support the assertions presented in support of the rejection of claim 9.

For at least the above reasons, Applicants submit that claim 9 is not *prima facie* obvious in view of the cited references. Reconsideration and withdrawal of this rejection are, therefore, respectfully requested.

Claims 13 and 18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Japuntich et al. in view of Braun (U.S. Patent No. 4,934,362).

Applicants traverse this rejection and submit that claims 13 and 18 are not *prima facie* obvious because the combination of Japuntich et al. and Braun does not teach all of the elements of such claims. For example, claim 13, which depends from claim 1, and claim 18, which depends from claim 15, recite all of the elements of the independent claims from which they depend. As stated above, Japuntich et al. does not teach all of the elements of either independent claim 1 or claim 15 (e.g., Japuntich et al. does not teach a valve flap having a contour shape). The addition of Braun does nothing to cure this deficiency already present in Japuntich et al. For example, Braun teaches a valve flap that is cut from a flat sheet of pure gum rubber. *See, e.g., Braun, column 5, lines 23-26.* Braun does not teach a valve flap having a contour shape.

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Therefore, the combination of Japuntich et al. and Braun does not teach all of the elements of claims 13 and 18.

For at least the above reasons, Applicants submit that claims 13 and 18 are not *prima facie* obvious in view of the cited references. Reconsideration and withdrawal of this rejection are, therefore, respectfully requested.

Claim 16 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Japuntich et al. in view of Adler (U.S. Patent No. 5,357,947).

Applicants traverse this rejection and submit that claim 16 is not *prima facie* obvious because the combination of Japuntich et al. and Adler does not teach all of the elements of claim 16. For example, claim 16, which depends from independent claim 15, includes all of the elements recited by independent claim 15. As stated above, Japuntich et al. does not teach all of the elements of claim 15 (e.g., Japuntich et al. does not teach a flap valve having a contour shape). The addition of Adler does nothing to correct this deficiency that is already present in Japuntich et al. In fact, Adler does not teach a valve or valve flap, let alone a valve flap having a contour shape. Therefore, the combination of Japuntich et al. and Adler does not teach all of the elements of claim 16.

For at least the above reasons, Applicants submit that claim 16 is not *prima facie* obvious in view of the cited references. Reconsideration and withdrawal of this rejection are, therefore, respectfully requested.

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**Summary**

It is respectfully submitted that the pending claims 1-18 are in condition for allowance and notification to that effect is respectfully requested. The Examiner is invited to contact Applicants' Representatives, at the below-listed telephone number, if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted for  
MITTELSTADT et al.

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**CERTIFICATE UNDER 37 C.F.R. § 1.8:**

The undersigned hereby certifies that this paper is being transmitted by facsimile in accordance with 37 C.F.R. § 1.6(d) to the Patent and Trademark Office, addressed to Assistant Commissioner for Patents, Washington, D.C. 20231, on this 13th day of November, 2002, at 5:35 PM (Central Time).

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**APPENDIX A - SPECIFICATION/CLAIM AMENDMENTS  
INCLUDING NOTATIONS TO INDICATE CHANGES MADE  
Serial No.: 09/888,943  
Docket No.: 56842US002 (formerly 56482USA4A.002)**

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Amendments to the following are indicated by underlining what has been added and bracketing what has been deleted.

**In the Claims**

For convenience, all pending claims are shown below.

✓ 1. **(Once Amended)** A unidirectional valve comprising:  
a valve body including a frame, a valve opening through the frame, and a valve seat extending from the frame and at least partially surrounding the valve opening; and  
a valve flap having a first portion attached to the frame and an adjacent second portion free to move from a first position where the second portion is in contact with at least a part of the valve seat to a second position where at least part of the second portion is spaced from the valve seat, wherein the valve flap has a contour shape, and further wherein at least a portion of the contour shape of the valve flap is at least partially flattened when the valve flap contacts the valve seat.

✓ 2. The unidirectional valve of claim 1, wherein the valve flap further comprises a first side spaced from a second side, and wherein the valve contour varies between the first and second sides.

3. The unidirectional valve of claim 2, wherein the valve flap has a compound curvature.

✓ 4. The unidirectional valve of claim 1, wherein the valve flap further comprises a first end spaced from a second end, and wherein the valve contour varies between the first and second ends.

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5. The unidirectional valve of claim 1, wherein the valve flap further comprises a top surface, a bottom surface, and at least one support element extending from the top surface of the valve flap.

6. The unidirectional valve of claim 5, wherein the at least one support element provides the contour shape of the valve flap.

7. The unidirectional valve of claim 6, further comprising a plurality of support elements, wherein each of the plurality of support elements is spaced from each adjacent support element.

8. The unidirectional valve of claim 1, wherein the valve seat is generally planar and the valve flap has a curvature that causes a bias of the valve flap toward the valve seat to provide a seal between the valve flap and the valve seat.

9. The unidirectional valve of claim 8, wherein at least a portion of the curvature of the valve flap is at least partially flattened when the valve flap contacts the valve seat.

10. The unidirectional valve of claim 8, wherein the bias of the valve flap toward the valve seat is sufficient to provide a seal between the valve flap and the valve seat in any orientation of the unidirectional valve.

11. The unidirectional valve of claim 1, wherein the frame of the valve body includes an angled portion adjacent the valve seat.

12. The unidirectional valve of claim 1, wherein the valve is an exhalation valve.

13. The unidirectional valve of claim 1, wherein the valve is an inhalation valve.

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14. The unidirectional valve of claim 1, wherein the valve flap is removably attached to the valve body.

15. **(Once Amended)** A respirator having a unidirectional valve, comprising; a face mask having at least one opening for receiving a unidirectional valve; and a unidirectional valve comprising:

a valve body including a frame, a valve opening through the frame, and a valve seat extending from the frame and at least partially surrounding the valve opening; and

a valve flap having a first portion attached to the frame and an adjacent second portion free to move from a first position where the second portion is in contact with at least a part of the valve seat to a second position where at least part of the second portion is spaced from the valve seat, wherein the valve flap has a contour shape, and further wherein at least a portion of the contour shape of the valve flap is at least partially flattened when the valve flap contacts the valve seat.

16. The respirator of claim 15, wherein the face mask is formed of a filtering material.

17. The respirator of claim 15, wherein the unidirectional valve is an exhalation valve.

18. The respirator of claim 15, wherein the unidirectional valve is an inhalation valve.